



## MEMORANDUM

To: City of Vancouver  
Attention: Keith Jones

From: William Reynolds, PE (WA), AICP, PTP  
RBT Consultants

Date: January 7, 2022

Subject: Parking Management Plan for the HQ Master Plan Project

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### Executive Summary

The following memo documents a review of minimum off-street parking required by Vancouver Municipal Code for the HQ Master Plan project, as well as a parking management plan to allow for a shared-parking approach. Key findings and recommendations are summarized below:

- Based on the proposed land uses and gross floor area for each building (Lots 1-30), a minimum of **4,890 off-street parking stalls** would be required to meet base code requirements (VMC Section 20.945.070), including reductions to account for shared parking within the mixed-use core area of the project (VMC Section 20.945.030).
- The proposed **5,308 off-street stalls** exceeds minimum code requirements, not including the additional 627 on-street stalls which would be used essentially exclusively by visitors to the project area. This is summarized by Zone in the following table:

	Zone A	Zone B-1	Zone B-2	Zone C-F	Total
Code-Required Parking Supply	233	1,222	12	3,423	<b>4,890</b>
Proposed Parking Supply	445	1,347	24	3,492	<b>5,308</b>
Surplus/Deficit	+212	+125	+12	+69	<b>+418</b>
Meets Code Requirements	Yes	Yes	Yes	Yes	<b>Yes</b>

- Zone A (office-industrial area) and Zone B (residential area) exceed minimum parking requirements, and additionally, peak parking demands in these areas are not expected to exceed the proposed off-street parking supplies. Each development will need to comply with both minimum and maximum parking requirements during the site plan review process, and some adjustments may be needed if the final plan exceeds code-allowed parking maximums.
- Zone C does not currently meet minimum parking requirements as a standalone zone (273 stall deficit), but when combined with adjacent zones, Zones C-F exceed the minimum parking requirements by 69 stalls. During the phasing of the project, parking will need to be shared within this area to ensure users of Zone C will have the ability to park in some combination of Zone D, E, and F to meet code requirements.

- Using the methodology outlined by ULI's *Shared Parking, 3<sup>rd</sup> Edition* (with demand ratios based primarily on 85<sup>th</sup> percentile rates from *ITE's Parking Generation, 5<sup>th</sup> Edition*), and assuming 1,180 stalls reserved exclusively for residents, weekday parking demand within the mixed-use core area of the project (Zones C-F) is expected to peak at 2:00 PM with **3,127 vehicles**<sup>1</sup> (82% of the combined on- and off-street supply in this core area). Weekend parking demand within the mixed-use core is expected to peak at 8:00 PM with **3,017 vehicles**<sup>2</sup> (80% of the combined on- and off-street supply in this core area).
- To ensure a shared parking approach serves the anticipated users effectively and efficiently, several recommendations are presented as part of a parking management plan, including the following elements:

**On-Street System**

- Implement On-Street Time Limits with Enforcement

**Off-Street System (Zone A)**

- Install "No Overnight Parking" Signage (If Warranted):

**Off-Street System (Zone B-1)**

- Unbundle Parking Fees from Rent

**Off-Street System (Zones C-F)**

- Implement Time-Limited Parking in the Most Convenient Customer Parking Areas
- Implement Time-Limited/Or-By-Permit Parking in All Areas to be Shared by Customers, Employees, and Residents
- Utilize a Two-Tiered Residential Parking Pricing Approach
- Avoid 24-Hour Employee-Only Parking
- Real-Time Parking Availability Signage

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<sup>1</sup> This includes 2,419 parked vehicles and 708 empty (but reserved) residential stalls.

<sup>2</sup> This includes 2,815 parked vehicles and 202 empty (but reserved) residential stalls.

## Introduction

The proposed HQ Master Plan area is located adjacent to the SR-14/SE 192<sup>nd</sup> Avenue interchange, near the eastern city limits of Vancouver, WA. The 99-acre site is generally bounded by SR-14 to the south, SE 192<sup>nd</sup> Avenue to the east, and the Fisher's Creek neighborhood to the north and west. The proposed master plan development is projected to be fully constructed by 2031.

The purpose of this memo is to

- 1) Document the minimum amount of parking required by code
- 2) Outline a parking management plan to manage anticipated parking demands

## Land Uses

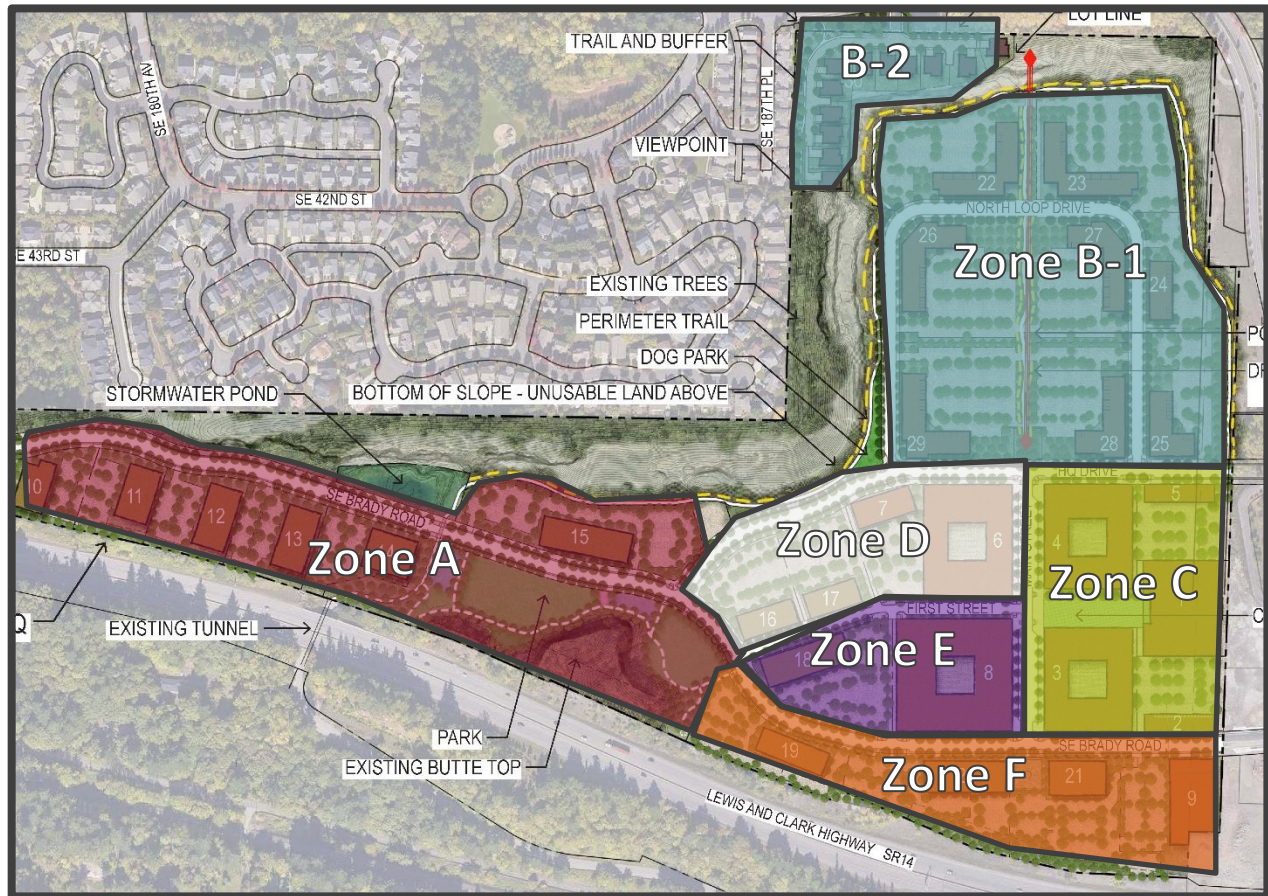
**Table 1** outlines the proposed building gross floor area (GFA) of each land use type planned for project. Lot numbers correspond to the Draft Conceptual Master Plan (dated December 29, 2021) shown in **Figure 1**.

*Table 1: Land Uses<sup>3</sup>*

Use	Lots	Building GFA (1,000 ft <sup>2</sup> )	Percent of Total	Notes
Ice Skating Rink	1	76,875	3%	2 Rinks
Hotel	2	52,045	2%	120 Rooms
Retail Shopping	3-9	132,970	5%	-
Restaurant	3-9	44,320	2%	-
Multifamily Residential	3-6, 8, 22-29	1,862,968	74%	1,993 Units
General Office	15-19, 21	214,925	9%	-
Medical-Dental Office	20	41,600	2%	-
Research & Development	10-14	75,409	3%	-
Single-Family Residential	30	TBD	-	24 Units
		<b>2,501,112</b>	<b>100%</b>	

<sup>3</sup> Both Lot 2 and Lot 5 are assumed to be commercial uses as part of the Master Plan. For consistency with the Traffic Analysis, however, Lot 2 has been assumed to be a 120-room hotel, and Lot 5 has been assumed to include 5,620 ft<sup>2</sup> of retail shopping, 1,870 ft<sup>2</sup> of restaurant, and 55 residential units.

Figure A: Draft Conceptual Master Plan



## Off-Street Parking Requirements

The following section provides an analysis of whether each Zone meets the minimum parking required by Vancouver's Municipal Code. Both Zone A and Zone B are assumed to be self-contained, with no shared parking with other zones. Zones C-F are referred to as the "Mixed-Use Core", where it is assumed parking will be shared across all four zones.

### Zone A: Office-Industrial Area

Lots 10 through 15 are proposed to consist of the following land uses:

- General Office (Lots 10-14): 43,230 ft<sup>2</sup> GFA
- Research and Development (Lot 15): 75,409 ft<sup>2</sup> GFA

Given the walking distance to the retail core of the site, this area has been excluded from the shared parking analysis and all parking demand will be self-contained within Zone A. The proposed 445 off-street stalls in this area (3.8 stalls / 1,000 ft<sup>2</sup>) exceeds the 233 minimum parking stalls required by code by 212 stalls (see **Table 2**). The proposed 70 on-street stalls in this area are likely to be used by park and trail uses, and potentially spillover from the retail core during events or periods of excessively high demand.

*Table 2: Minimum Required Off-Street Parking for Lots 10-15*

Lot	Land Use	Quantity	Parking Required (Code)	Required Stalls	Proposed Supply	Surplus/ Deficit
<b>Lot 10</b>	Research	12,256 ft <sup>2</sup>	1.67 / 1,000 ft <sup>2</sup>	20	44	+24
<b>Lot 11</b>	Research	14,416 ft <sup>2</sup>	1.67 / 1,000 ft <sup>2</sup>	24	48	+24
<b>Lot 12</b>	Research	16,815 ft <sup>2</sup>	1.67 / 1,000 ft <sup>2</sup>	28	63	+35
<b>Lot 13</b>	Research	16,904 ft <sup>2</sup>	1.67 / 1,000 ft <sup>2</sup>	28	63	+35
<b>Lot 14</b>	Research	15,018 ft <sup>2</sup>	1.67 / 1,000 ft <sup>2</sup>	25	55	+30
<b>Lot 15</b>	Office	43,230 ft <sup>2</sup>	2.50 / 1,000 ft <sup>2</sup>	108	172	+64
<b>Total:</b>				233	445	+212

**Finding:** The proposed parking supply in Zone A exceeds minimum parking requirements by 212 stalls<sup>4</sup>.

<sup>4</sup> Each development will need to comply with both minimum and maximum parking requirements during the site plan review process. The proposed parking supply exceeds minimum parking requirements, but some adjustments may be needed if the final plan exceeds code-allowed parking maximums.

## Zone B: Residential Area

Lots 22 through 30 are proposed to consist exclusively of the following land uses:

- Mid-rise multifamily residential 813 dwelling units (Lots 22-29)
- Single family residential 12 dwelling units (Lot 30)

This area has been excluded from the shared parking analysis given the single-use nature and all parking demand will be self-contained within Zone B. Further, Lot 30 is physically separated from the rest of the development with separate roadway access, and there will be no access between these 12 single-family homes and the adjacent land uses. As an isolated lot, this area is referred to as Zone B-2, with Lots 22-29 classified as Zone B-1.

### Zone B-1

The proposed 1,347 off-street stalls in Zone B-1 (1.6 stalls / unit) exceeds the 1,222 minimum number of parking stalls required by code by 125 stalls, or 10% (see **Table 3**). The proposed 257 on-street stalls in the area are likely to be used by residential guests and spillover from the mixed-use core during events or periods of excessively high demand.

*Table 3: Minimum Required Off-Street Parking for Lots 22-29*

Lot	Land Use	Quantity	Parking Required (Code)	Required Stalls	Proposed Supply	Surplus/ Deficit
Lot 22	Multifamily Residential	119 units	1.5 / unit	179	188	+9
Lot 23	Multifamily Residential	128 units	1.5 / unit	192	223	+31
Lot 24	Multifamily Residential	51 units	1.5 / unit	77	86	+9
Lot 25	Multifamily Residential	82 units	1.5 / unit	123	132	+9
Lot 26	Multifamily Residential	115 units	1.5 / unit	173	199	+26
Lot 27	Multifamily Residential	105 units	1.5 / unit	158	168	+10
Lot 28	Multifamily Residential	96 units	1.5 / unit	144	155	+11
Lot 29	Multifamily Residential	117 units	1.5 / unit	176	196	+20
		<b>813 units</b>	<b>Total:</b>	<b>1,222</b>	<b>1,347</b>	<b>+125</b>

**Finding:** The proposed parking supply in Zone B-1 exceeds minimum parking requirements by 125 stalls (10%).

### Zone B-2

The proposed 24 off-street stalls in Zone B-2 (1.0 stalls / unit) exceeds the 12 minimum number of parking stalls required by code by 12 stalls (see **Table 4**). Parking demand will be self-contained in this area, with no parking demand associated with other land uses within the development given the physical separation and separate access.

*Table 4: Minimum Required Off-Street Parking for Lot 30*

Lot	Land Use	Quantity	Parking Required (Code)	Required Stalls	Proposed Supply	Surplus/ Deficit
Lot 30	Single-Family Residential	12 units	1.0 / unit	12	24	+12

**Finding:** The proposed parking supply in Zone B-2 exceeds minimum parking requirements by 12 stalls (100%).



## Zones C-F: Mixed-Use Core

Lots 1 through 9 and 16 through 21 are proposed to consist of a variety of uses including:

- Ice Skating Rink: 76,875 ft<sup>2</sup> GFA (2 ice rinks)
- Hotel: 52,045 ft<sup>2</sup> GFA (120 rooms)
- Retail Shopping: 132,970 ft<sup>2</sup> GFA
- Restaurants: 44,320 ft<sup>2</sup> GFA
- Mid-Rise Multifamily Residential: 1,099,043 ft<sup>2</sup> GFA (1,180 dwelling units)
- Medical-Dental Office: 41,600 ft<sup>2</sup> GFA
- General Office: 171,695 ft<sup>2</sup> GFA

In this area, it is assumed that parking within all garages and surface lots will be shared across all four zones (Zones C through F).<sup>5</sup> **Section 20.945.030.C** of Vancouver’s Municipal Code (“Parking in mixed-use projects”) notes that mixed-use projects that share a single parking facility may adjust the code-required minimum parking using the following approach:

- 100% of required parking for primary use
- 90% for secondary uses
- 80% for all subsequent uses

The calculation of the code-required minimum parking, including allowed mixed-use reductions, was applied to each zone independently. Using this approach, after allowed reductions, Zone C does not meet the minimum amount of parking required by code (273 stall deficit). However, when all four zones are combined, the proposed parking supply of 3,492 stalls exceeds the 3,423 minimum parking stalls required by code<sup>6</sup> by 69 stalls (see **Table 5**). In addition to exceeding the off-street parking requirements, 300 on-street stalls are proposed for the streets within this area, which would primarily serve the land uses in this mixed-use core.

**Finding:** The combined proposed parking supply in Zones C-F exceeds minimum parking requirements by 69 stalls<sup>7</sup>.

<sup>5</sup> With the exception of 1,180 reserved residential stalls (1 per unit)

<sup>6</sup> This includes a reduction of 241 stalls (or 7% reduction) by taking into account mixed-use reductions allowed by **Section 20.945.030.C** of Vancouver’s Municipal Code. With no mixed-use reductions, 3,664 stalls would be required by code.

<sup>7</sup> Zone C does not meet code minimum parking requirements as a standalone zone, and shared parking agreements will be necessary to ensure users will have the ability to park in some combination of Zone D, E, and F to address the deficit.

Table 5: Minimum Off-Street Parking Requirements within Zones C-F (Mixed-Use Core)

Lot	Land Use	Quantity	Parking Required (Code)	Base Required Stalls	Mixed-Use Reduction Factor	Adjusted Required Stalls
<b>Zone C</b>						
<b>Lot 1</b>	Ice Rink	76,875 ft <sup>2</sup>	6.67 / 1,000 ft <sup>2</sup>	513	0.90	462
<b>Lot 2</b>	Hotel	120 rooms	1.0 / room	120	0.80	96
<b>Lot 3/4/5</b>	Retail	44,620 ft <sup>2</sup>	3.33 / 1,000 ft <sup>2</sup>	149	0.80	119
<b>Lot 3/4/5</b>	Restaurant	14,870 ft <sup>2</sup>	4.00 / 1,000 ft <sup>2</sup>	60	0.80	48
<b>Lot 3/4/5</b>	Residential	565 units	1.5 / unit	848	1.00	848
<b>Total</b>				<b>1,690</b>	<b>0.93</b>	<b>1,573</b>
<b>Zone C Proposed Supply:</b>						<b>1,300</b>
<b>Surplus/Deficit:</b>						<b>-273</b>
<b>Zone D</b>						
<b>Lot 6/7</b>	Retail	42,225 ft <sup>2</sup>	3.33 / 1,000 ft <sup>2</sup>	141	0.90	127
<b>Lot 6/7</b>	Restaurant	14,075 ft <sup>2</sup>	4.00 / 1,000 ft <sup>2</sup>	57	0.80	46
<b>Lot 6</b>	Residential	285 units	1.5 / unit	428	1.00	428
<b>Lot 16/17</b>	Office	55,260 ft <sup>2</sup>	2.50 / 1,000 ft <sup>2</sup>	138	0.80	111
<b>Total</b>				<b>764</b>	<b>0.93</b>	<b>712</b>
<b>Zone D Proposed Supply:</b>						<b>960</b>
<b>Surplus/Deficit:</b>						<b>+248</b>
<b>Zone E</b>						
<b>Lot 8</b>	Retail	26,625 ft <sup>2</sup>	3.33 / 1,000 ft <sup>2</sup>	89	0.80	71
<b>Lot 8</b>	Restaurant	8,875 ft <sup>2</sup>	4.00 / 1,000 ft <sup>2</sup>	36	0.80	29
<b>Lot 8</b>	Residential	330 units	1.5 / unit	495	1.00	495
<b>Lot 18</b>	Office	41,720 ft <sup>2</sup>	2.5 / 1,000 ft <sup>2</sup>	104	0.90	94
<b>Total</b>				<b>724</b>	<b>0.95</b>	<b>689</b>
<b>Zone E Proposed Supply:</b>						<b>751</b>
<b>Surplus/Deficit:</b>						<b>+62</b>
<b>Zone F</b>						
<b>Lot 9</b>	Retail	19,500 ft <sup>2</sup>	3.33 / 1,000 ft <sup>2</sup>	65	0.80	52
<b>Lot 9</b>	Restaurant	6,500 ft <sup>2</sup>	4.00 / 1,000 ft <sup>2</sup>	26	0.80	21
<b>Lot 19/21</b>	Office	74,715 ft <sup>2</sup>	2.50 / 1,000 ft <sup>2</sup>	187	0.90	168
<b>Lot 20</b>	Medical-Dental	41,600	5.00 / 1,000 ft <sup>2</sup>	208	1.00	208
<b>Total</b>				<b>486</b>	<b>0.92</b>	<b>449</b>
<b>Zone F Proposed Supply:</b>						<b>481</b>
<b>Surplus/Deficit:</b>						<b>+32</b>
<b>Grand Total Required Stalls</b>						<b>3,423</b>
<b>Zones C-F Proposed Supply:</b>						<b>3,492</b>
<b>Overall Surplus/Deficit:</b>						<b>+69</b>



## Shared Parking Analysis

Both Zone A (Office-Industrial Area) and Zone B (Residential Area) meet minimum parking requirements, and all parking demand will be self-contained within each zone. Zones C-F (Mixed-Use Core) also meets minimum parking requirements (assuming parking is shared across all 4 zones), but in order to inform the parking management strategies, a shared parking analysis was conducted to assess peak demands by time of day. A more detailed discussion of the parking demand assumptions for each individual land use within Zones C-F is provided in **Appendix A**.

**Figures B and C** show the total parking demand by time of day for each land use within the mixed-use core area (Zones C-F) on a weekday and weekend, respectively. If 1,180 residential stalls are reserved for the exclusive use of residents at all hours (1 stall per unit) and all remaining 2,312 off-street stalls within this mixed-use core area are open to the public and made available to all users<sup>8</sup>, estimated peak demand during a typical week would not be expected to exceed 82% of the on- and off-street parking supply within the mixed-use core area. More specifically, peak demand is estimated to be **3,127 vehicles at 2:00 PM on a typical weekday** (which includes 708 residential stalls that are empty at this hour but unable to be used by other users). Peak demand is estimated to be **3,017 vehicles at 8:00 PM on a typical Saturday** (which includes 202 residential stalls that are empty at this hour but unable to be used by other users).

Put another way, at least 300 off-street parking stalls within the mixed-use core area would consistently be open and available during a typical week, even during the weekday midday peak period, not accounting for the additional capacity provided by the 300 on-street stalls within the mixed-use core area.

Use	Required Parking (Code)	Weekday Peak Demand (@ 2:00 PM)	Weekend Peak Demand (@ 8:00 PM)	Proposed Supply
Ice Skating Rink	462 stalls	128 vehicles	263 vehicles	<b>3,492 off-street stalls</b> (2,312 shared + 1,180 reserved)
Retail Shopping	369 stalls	394 vehicles	302 vehicles	
Restaurant	144 stalls	400 vehicles	669 vehicles	
Hotel	96 stalls	90 vehicles	100 vehicles	
General Office	373 stalls	556 vehicles	0 vehicles	
Medical-Dental Office	208 stalls	192 vehicles	0 vehicles	
Residential (Shared)	591 stalls	187 vehicles	503 vehicles	<b>300 on-street stalls</b>
Residential (Reserved)	1,180 stalls	1,180 vehicles <sup>9</sup>	1,180 vehicles <sup>10</sup>	
	<b>3,423 stalls</b>	<b>3,127 vehicles</b>	<b>3,017 vehicles</b>	

<sup>8</sup> This assumes no other parking stalls are “reserved” for other non-residential users, such as office employees. Time limits or paid parking would not violate this assumption as these are management tools to help distribute demand.

<sup>9</sup> Includes 472 occupied stalls and 708 empty but reserved residential stalls.

<sup>10</sup> Includes 978 occupied stalls and 202 empty but reserved residential stalls.

Figure B: Weekday Parking Demand by Time of Day (Zones C-F)

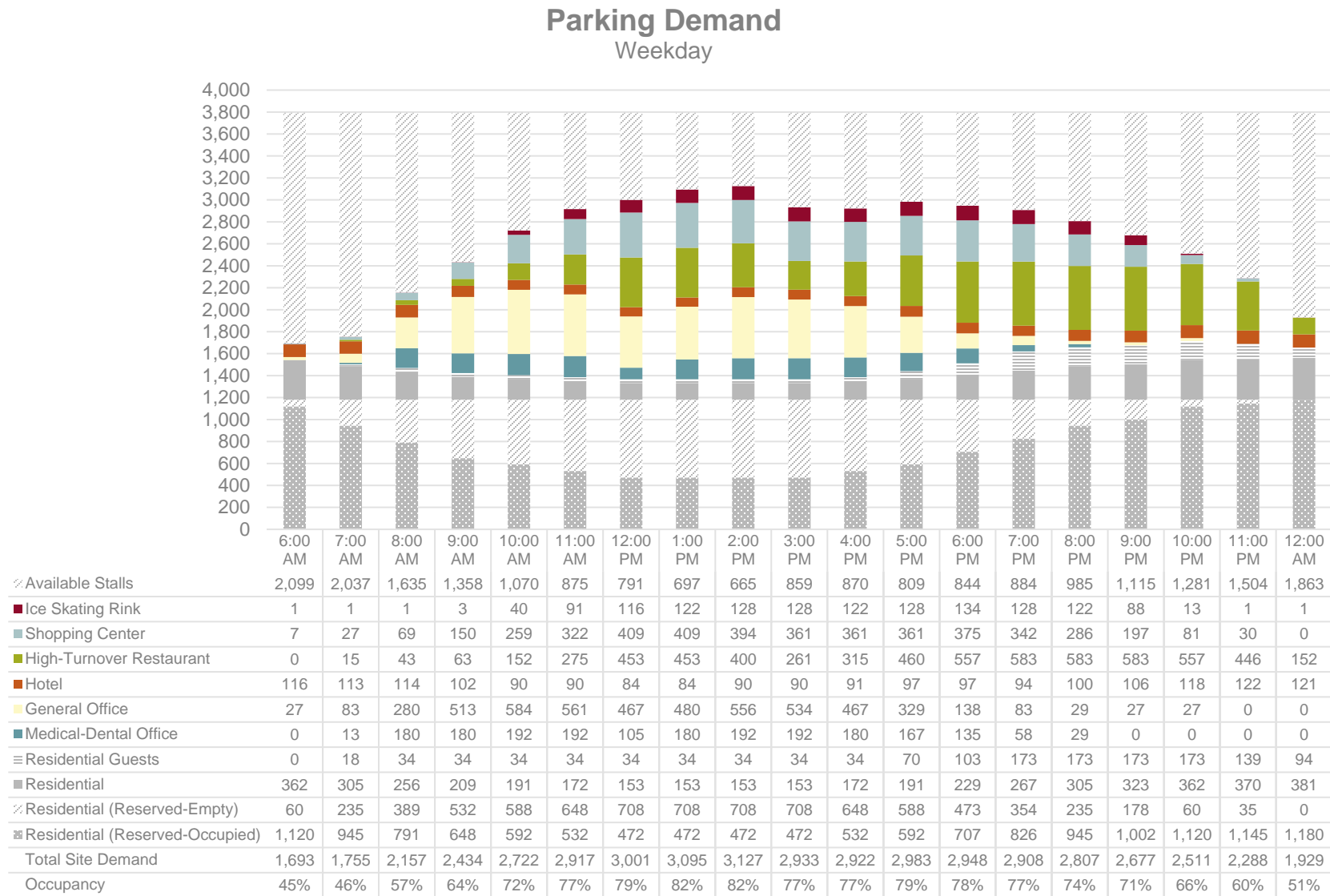
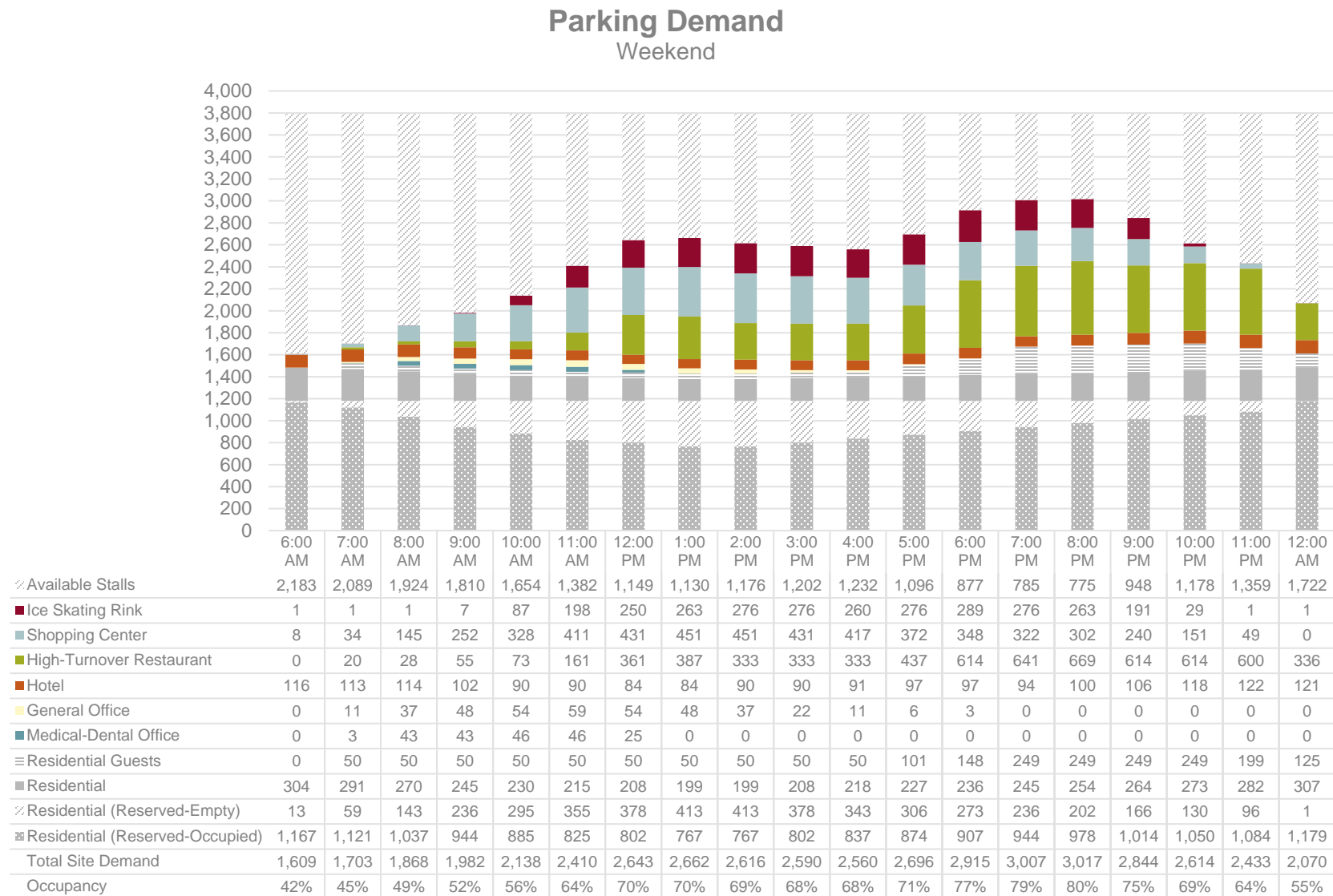


Figure C: Weekend Parking Demand by Time of Day (Zones C-F)



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## Parking Management Plan

Allowing all users (including customers, visitors, employees, residents, and residential guests) to share the on-street and off-street parking supply within the mixed-use core area will help to ensure that parking is easy to find. Additionally, a shared parking approach will make it much easier to accommodate excess demand during the highest demand periods during the year (events, peak December shopping season, etc.) To allow the system to function in the manner assumed within this shared parking analysis, several parking management strategies are recommended in the following section.

### ON-STREET SYSTEM

As part of the HQ Master Plan, more than 600 on-street parking stalls are proposed across all zones. As City-owned streets, the City of Vancouver will ultimately decide how to manage and enforce the on-street parking system. Given the proposed mix of uses and anticipated levels of parking demand, without on-street parking management, it is likely that many on-street parking areas will fill first, potentially leading to excessive circulation as customers and visitors search for available parking. The following strategies<sup>11</sup> should be considered to help manage the anticipated levels of on-street demand.

- **On-Street Time Limits:** At full build, on-street time limits (such as 2-hour parking from 9 AM – 6 PM Monday through Friday), will discourage residents and employees from parking all-day in the most convenient and accessible parking areas. Time limits will help to prioritize the most visible parking for customers, visitors, and residential guests, and minimize the amount of time these users spend driving around searching for parking. When coupled with effective enforcement and off-street management strategies to get the right users to the right parking areas, on-street time-limits will help the entire system function more efficiently and make it easier to quickly find parking.
- **On-Street Parking Enforcement:** On-street time limits will require some amount of parking enforcement to ensure that users (particularly employees and residents) are adhering to the rules. In this environment, the objective of enforcement is not to penalize customers and visitors who stay slightly longer than the posted time-limit, but rather to ensure that residents and employees do not store their vehicles on-street all day, taking up highly visible and convenient parking. In this context, occasional enforcement to capture repeat violators is likely to be adequate to help prioritize the on-street system for short-term parking needs.
- **On-Street Paid Parking (If Warranted Based on Measured Demand):** Free, time-limited on-street parking with enforcement may be adequate to ensure the on-street system is prioritized for customers and visitors. However, in certain areas (likely the mixed-use core), on-street parking demand levels may lead to a perception among visitors that there is “never any parking available,” even when there is ample parking available in the off-street lots and garages. In this context, if more than 85% of the on-street parking in certain areas is occupied consistently during peak hours, on-street paid parking may be warranted and could serve as a cost-effective strategy to help encourage visitors to make use of the off-street system. **Note:** On-street paid parking is only recommended if demand levels consistently exceed the 85% occupancy threshold and a cost-benefit analysis demonstrates that the system will cover the costs of installation and maintenance over time. This strategy is not recommended as part of any initial phase and should only be considered upon build-out if time limits and enforcement prove to be inadequate to encourage visitors to park in the off-street lots and garages.

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<sup>11</sup> These strategies do not apply to Zone B-2, which is exclusively single-family residential and physically separated from all other areas.

## OFF-STREET SYSTEM

The off-street system will be privately managed and enforced, but all parking management strategies need to work in partnership with the on-street system. Given the size of the project and the different use characteristics, the recommendations below are discussed by zone.

### Zone A (Office-Industrial Area)

- **Install “No Overnight Parking” Signage (If Warranted):** In an environment where residents are required to pay a fee for off-street permit parking, some residents may look to nearby free parking areas to store their vehicle to avoid paying a monthly fee. If it is determined that residents are parking within the off-street lots in Zone A to avoid purchasing a permit, “No parking 2am – 5am, all days” with targeted enforcement is likely to be adequate to address this issue.

### Zone B-1 (Residential Area)

- **Unbundle Parking Fees from Rent:** The proposed off-street parking supply within Zone B-1 exceeds code requirements and is expected to meet the parking needs for residents and their guests. To encourage residents to consider their true parking needs, a permit parking program is recommended with residents paying a monthly (or annual) fee for a parking permit for each vehicle stored on-site. In order to prioritize parking for residents within this zone, each off-street lot should be signed “Permit Parking Only,” with allowances for guest parking permits allocated by unit<sup>12</sup>. **Note:** This permit program will work best with on-street time limits in place; if the on-street system is free and unrestricted, many residents would likely simply park on-street and avoid purchasing a permit.

### Zones C-F (Mixed-Use Core)

- **Implement Time-Limited Parking in the Most Convenient Customer Parking Areas:** In a mixed-use environment where there is office, residential, and retail, it is important to ensure customers and visitors have access to the most convenient and easily-accessible areas to minimize time spent searching for parking. In some areas (such as the first floor of each parking garage or the areas closest to retail businesses within surface lots), time-limited parking (such as 3-hour parking, 9am – 6pm, Monday-Saturday) will help to prioritize parking for customers and ensure long-term parkers (employees and residents), park in other areas.
- **Implement Time-Limited/Or-By-Permit Parking in All Areas to be Shared by Customers, Employees, and Residents:** Permit programs for employees, residents, and hotel guests help to ensure these long-term users park outside of areas that should be prioritized for customers only. Much of the off-street parking should have signage that specifies time-limited/or-by-permit parking, such as “4-Hour parking, 9 AM – 6 PM, M-S / Or By Permit” to allow customer parking while ensuring all day parking is restricted to permit-holders (e.g. residents, employees, and hotel guests).
- **Utilize a Two-Tiered Residential Parking Pricing Approach:** The shared parking analysis assumes that 1,180 stalls (1 stall per unit) within the mixed-use core will be reserved for the exclusive use of residents to assist with marketing of the units (either with “permit-only, all-hours, all-days” signs or stalls behind an access gate). The remaining 591 stalls required by code within the mixed-use core would be open and available for all user types. Given these assumptions, residents should be given the option to pay for “premium” parking (the permit-parking only areas) or for a standard permit that allows them to park within the time-limited/or-by-permit shared parking areas. With either option, parking permits should be unbundled from rent in order to encourage residents to consider their true parking needs.
- **Avoid 24-Hour Employee-Only Parking:** The shared parking analysis assumes that no parking will be reserved for the exclusive use of the office buildings within the mixed-use core area. To ensure the

<sup>12</sup> This recommendation does not specifically apply to Zone B-2, which is located in an exclusively residential area.

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parking system is shared effectively, signage that restricts parking to certain user groups should be minimized. If there is a desire to prioritize parking for employees of the office buildings, any management strategy should only be applied during weekday daytime hours rather than more broadly restrictive signage such as “employee parking only” that implies 24-hour restrictions. The shared parking analysis will need to be recalculated if some form of employee-only parking is assumed.

- **Real-Time Parking Availability Signage:** With the off-street parking supply in the mixed-use core split across multiple garages and lots, it is likely that some areas will fill up much more quickly than other areas, even when there is ample parking available overall. Real-time signage showing available stalls at the entrance to each garage and lot will help to minimize customer frustration and excess traffic associated with vehicles searching for parking.

## Next Steps

These recommendations will be refined as the land uses and conceptual plans are updated.

## **Appendix A: Parking Demand Analysis within Mixed-Use Core (Zones C-F)**



## Methodology

In order to calculate peak parking demand within a mixed-use project that shares parking across one or more parking facilities, the first step is to calculate weekday and weekend parking demand by time of day for each component land use. This following section provides an estimate of forecasted parking demand for each land use within the mixed-use core area of the project<sup>13</sup>.

**Parking Demand Ratios:** The forecasts were developed using the methodology outlined within the Urban Land Institute's *Shared Parking, 3<sup>rd</sup> Edition (ULI)*. Data sources used include weekday and weekend<sup>14</sup> parking demand ratios, employee/resident/guest/customer/visitor demand splits, and time of day factors. ULI's recommended parking demand ratios are primarily based on the 85<sup>th</sup> percentile observations published in ITE's *Parking Generation Manual, 5<sup>th</sup> Edition (ITE)*. However, in some cases, ULI combined multiple land uses into a single demand profile or made other adjustments to approximate an 85<sup>th</sup> percentile demand profile when ITE's data was deemed inadequate to use directly. For reference, ITE's average rate (50<sup>th</sup> percentile) is shown in the parking demand table for each land use; however, the demand profile is based on either ULI's values or ITE's 85<sup>th</sup> percentile rate<sup>15</sup>.

**Mode Split:** For each demand profile, no adjustments have been made for mode split or auto occupancy. ITE demand data is typically based on suburban sites with limited transit availability, and when a significant portion of trips can be expected by alternative modes (transit, bike, etc.), adjustments are warranted. In this context, no mode split factors have been applied.

**Noncaptive Adjustments:** When calculating vehicle trips to a mixed-use project, it is common to account for "internal capture," or vehicle trips where the passengers visit multiple destinations within the project. This adjustment often has a significant impact on the total number of external vehicle trips during peak hours. However, caution must be used when attempting to reduce *parking* demand for these "captured" trips, as the passengers of each vehicle may visit multiple destinations, but their *vehicle* is still parked on-site for the same amount of time that would be associated with an independent trip to each land use. As a baseline assumption, an **85% noncaptive adjustment** has been applied exclusively to the retail and restaurant land uses. This effectively assumes that for these land uses, approximately 15% of all trips will draw from *persons whose vehicle would already be on site for the duration of their shopping/dining trip*. During the day, this 15% represents office employees and residents who already have their car on site. In the evening, this 15% primarily represents residents, as office employees who stay later into the evening would have otherwise departed with their vehicle. A higher captive ratio may be warranted given the large number of dwelling units, but a relatively small percentage has been assumed here as a preliminary estimate.

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<sup>13</sup> For each of the single-use lots (Lots 10-15 and Lots 22-30), the proposed off-street parking supply exceeds code requirements as well as peak vehicle demand estimated by ULI, so these lots are not analyzed in further detail. For reference, the office-industrial area (Lots 10-15) is proposing to provide 3.8 off-street stalls per 1,000 ft<sup>2</sup>, which is equivalent to ULI's peak demand ratio for small (<25,000 ft<sup>2</sup>) office buildings (3.8 vehicles/1,000 ft<sup>2</sup> GFA on weekdays). Similarly, the multifamily residential area (Lots 22-29) is proposing to provide 1.6 stalls per dwelling unit, which exceeds ITE's 85<sup>th</sup> percentile peak demand ratio (1.47 vehicles/dwelling unit on weekdays). Spillover demand into the on-street system or into the mixed-use core area is not expected given these proposed off-street supply ratios.

<sup>14</sup> The weekend rate includes Friday evening.

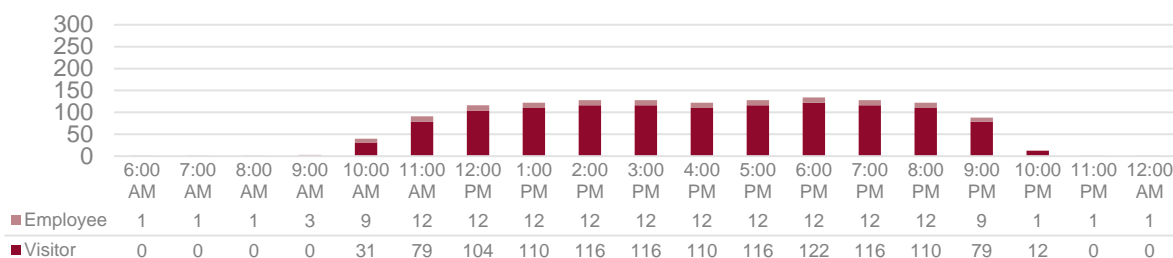
<sup>15</sup> ULI's *Shared Parking* recommends using the 85<sup>th</sup> percentiles as a design standard to accommodate sites that perform above average, but does not recommend adding an additional effective supply factor.

## Ice Skating Rink Parking Demand

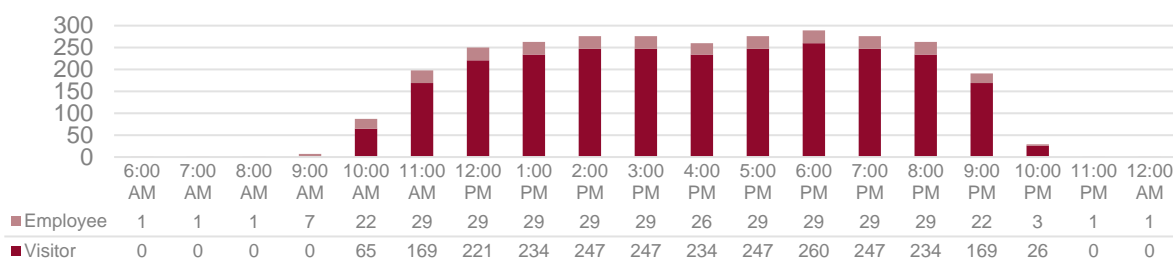
- **Gross Floor Area:** 76,875 ft<sup>2</sup> (2 rinks)
- **Minimum Required Off-Street Parking by Code:** 6.67 stalls / 1,000 ft<sup>2</sup>
- **Minimum Required Off-Street Stalls by Code:** 462 stalls (see Table 4)
- **ITE Land Use:** Ice Skating Rink (Land Use Code 465)
- **ULI Land Use:** Active Entertainment

Source	Weekday		Saturday	
ITE	42.64 / rink	85 vehicles	80.50 / rink	161 vehicles
ULI	<sup>16</sup> 1.65 / 1,000 ft <sup>2</sup>	127 vehicles	<sup>17</sup> 2.00 / 1,000 ft <sup>2</sup>	153 vehicles
ITE (85%) <sup>18</sup>	67.00 / rink	134 vehicles	144.50 / rink	289 vehicles
<b>Peak Demand:</b>		<b>134 vehicles</b>		<b>289 vehicles</b>
		<b>@ 6:00 PM</b>		<b>@ 6:00 PM</b>

### Weekday Parking Demand by Time of Day Ice Skating Rink



### Weekend Parking Demand by Time of Day Ice Skating Rink



<sup>16</sup> 1.50 visitor vehicles / 1,000 ft<sup>2</sup> + 0.15 employee vehicles / 1,000 ft<sup>2</sup>

<sup>17</sup> 1.80 visitor vehicles / 1,000 ft<sup>2</sup> + 0.20 employee vehicles / 1,000 ft<sup>2</sup>

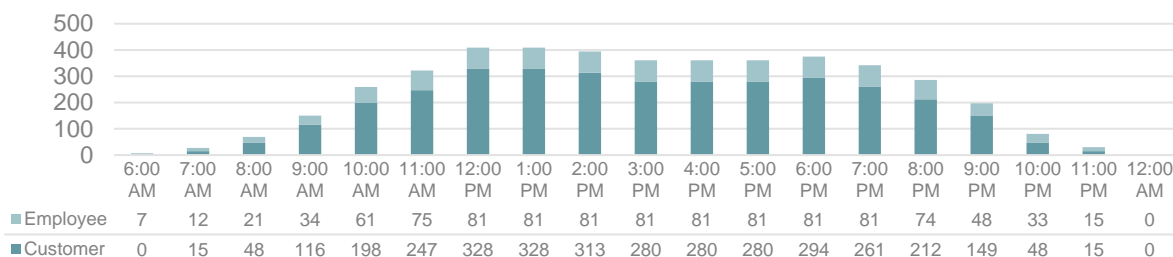
<sup>18</sup> In this case, the ITE 85th percentile rate *per rink* generates more parked vehicles than ULI, so the ITE 85th percentile rate is used along with the ULI time of day factors and the ULI employee/visitor split.

## Retail Parking Demand

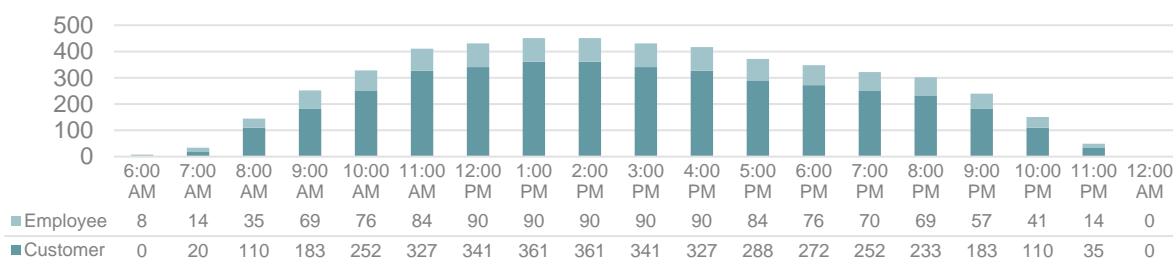
- **Gross Floor Area:** 132,970 ft<sup>2</sup>
- **Minimum Required Off-Street Parking by Code:** 3.33 stalls / 1,000 ft<sup>2</sup>
- **Minimum Required Off-Street Stalls by Code:** 369 stalls (see Table 4)
- **ITE Land Use:** Shopping Center (Land Use Code 820)
- **ULI Land Use:** Retail
- **Noncaptive Adjustment:** 85%

Source	Weekday				Saturday	
ITE	1.95 / 1,000 ft <sup>2</sup>	0.85	220 vehicles	2.91 / 1,000 ft <sup>2</sup>	0.85	329 vehicles
ULI	<sup>19</sup> 3.60 / 1,000 ft <sup>2</sup>	0.85	407 vehicles	<sup>20</sup> 4.00 / 1,000 ft <sup>2</sup>	0.85	451 vehicles
<b>Peak Demand:</b>			<b>409 vehicles<sup>21</sup></b>	<b>451 vehicles</b>		
			<b>@ 12:00 PM</b>	<b>@ 1:00 PM</b>		

Weekday Parking Demand by Time of Day  
Retail



Weekend Parking Demand by Time of Day  
Retail



<sup>19</sup> 2.90 customer vehicles / 1,000 ft<sup>2</sup> + 0.70 employee vehicles / 1,000 ft<sup>2</sup>

<sup>20</sup> 3.20 customer vehicles / 1,000 ft<sup>2</sup> + 0.80 employee vehicles / 1,000 ft<sup>2</sup>

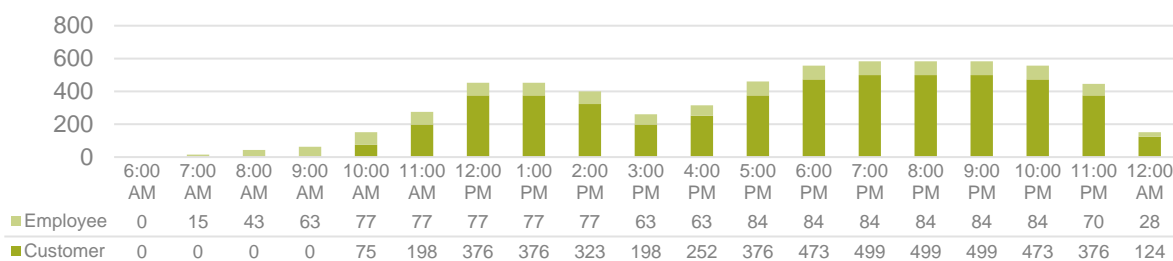
<sup>21</sup> Slightly more than calculated due to rounding within the shared parking model.

## Restaurant Parking Demand

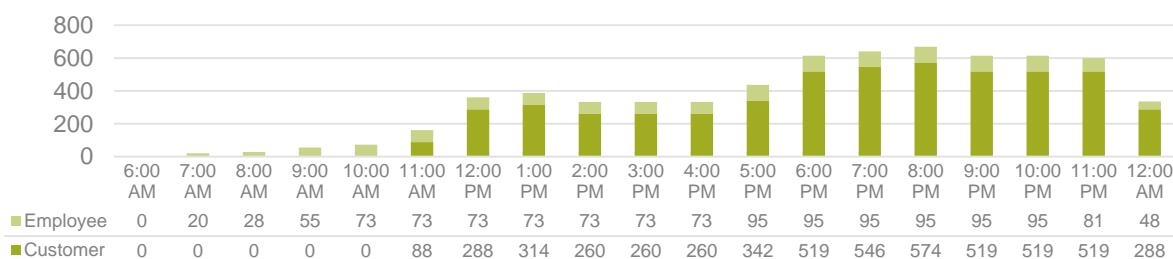
- **Gross Floor Area:** 44,320 ft<sup>2</sup>
- **Minimum Required Off-Street Parking by Code:** 4.00 stalls / 1,000 ft<sup>2</sup>
- **Minimum Required Off-Street Stalls by Code:** 144 stalls (see Table 4)
- **ITE Land Use:** High-Turnover with Lounge/Bar (Land Use Code 932)
- **ULI Land Use:** Fine/Casual Dining
- **Noncaptive Adjustment:** 85%

Source		Weekday		Saturday		
ITE	9.31 / 1,000 ft <sup>2</sup>	0.85	351 vehicles	13.98 / 1,000 ft <sup>2</sup>	0.85	527 vehicles
ULI	<sup>22</sup> 15.50 / 1,000 ft <sup>2</sup>	0.85	584 vehicles	<sup>23</sup> 17.75 / 1,000 ft <sup>2</sup>	0.85	669 vehicles
Peak Demand:			583 vehicles <sup>24</sup>	669 vehicles		
			@ 7:00 PM	@ 8:00 PM		

## Weekday Parking Demand by Time of Day



## Weekend Parking Demand by Time of Day



<sup>22</sup> 13.25 customer vehicles / 1,000 ft<sup>2</sup> + 2.25 employee vehicles / 1,000 ft<sup>2</sup>

<sup>23</sup> 15.25 customer vehicles / 1,000 ft<sup>2</sup> + 2.50 employee vehicles / 1,000 ft<sup>2</sup>

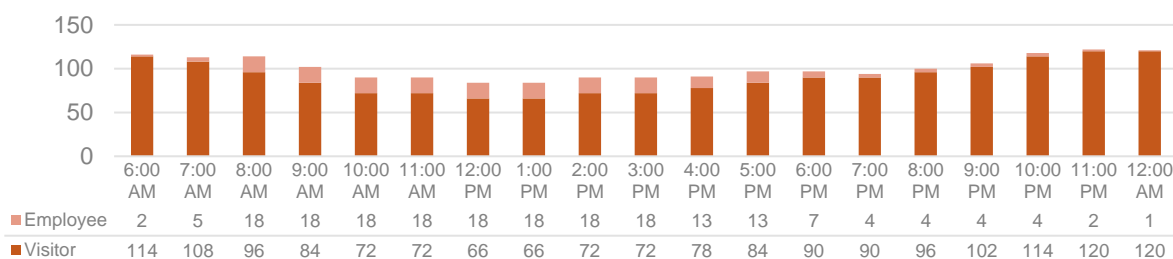
<sup>24</sup> Slightly less than calculated due to rounding within the shared parking model.

## Hotel Parking Demand

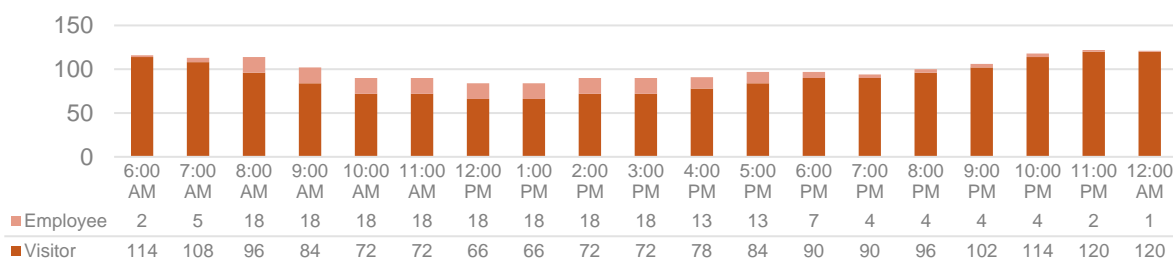
- **Gross Floor Area:** 52,045 ft<sup>2</sup> (120 rooms)
- **Minimum Required Off-Street Parking by Code:** 1.00 stalls / lodging unit
- **Minimum Required Off-Street Stalls by Code:** 96 stalls (see Table 4)
- **ITE Land Use:** Hotel (Land Use Code 310)
- **ULI Land Use:** Hotel - Business

Source	Weekday		Saturday	
ITE	0.74 / Room	89 vehicles	1.15 / Room	138 vehicles
ULI	<sup>25</sup> 1.15 / Room	138 vehicles	<sup>26</sup> 1.15 / Room	138 vehicles
<b>Peak Demand:</b>		<b>122 vehicles<sup>27</sup></b>	<b>122 vehicles<sup>28</sup></b>	
		<b>@ 11:00 PM</b>	<b>@ 11:00 PM</b>	

### Weekday Parking Demand by Time of Day Hotel



### Weekend Parking Demand by Time of Day Hotel



<sup>25</sup> 1.00 visitor vehicles / room + 0.15 employee vehicles / room

<sup>26</sup> 1.00 visitor vehicles / room + 0.15 employee vehicles / room

<sup>27</sup> Less than calculated as employee and visitor demand does not peak within the same hour.

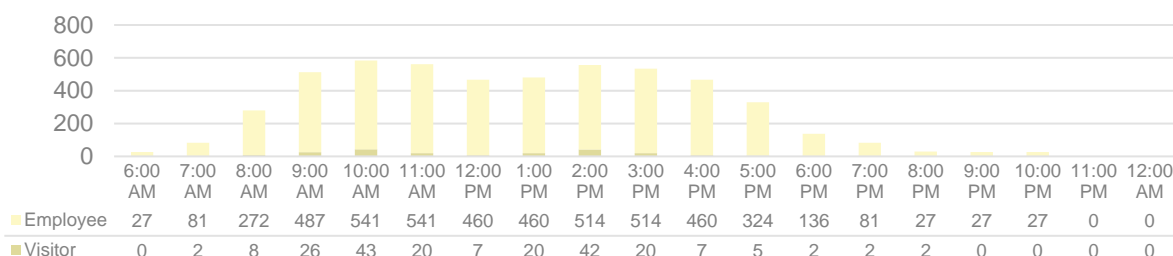
<sup>28</sup> Less than calculated as employee and visitor demand does not peak within the same hour.

## Office Parking Demand

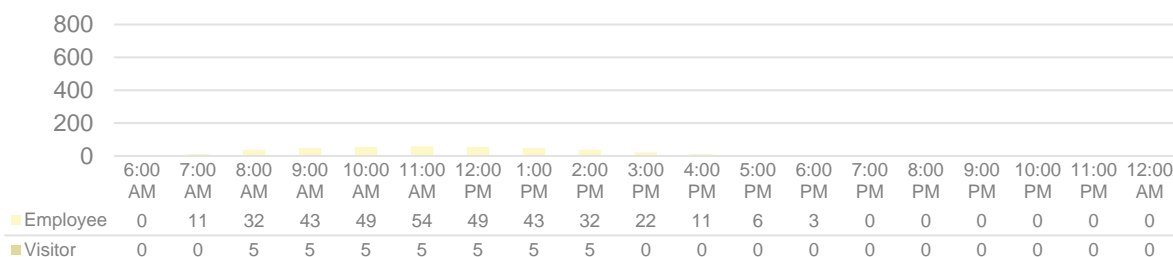
- **Gross Floor Area** (*Lots within Mixed-Use Core Only*): 171,695 ft<sup>2</sup>
- **Minimum Required Off-Street Parking by Code:** 2.50 stalls / 1,000 ft<sup>2</sup>
- **Minimum Required Off-Street Stalls by Code:** 373 stalls (see Table 4)
- **ITE Land Use:** General Office Building (Land Use Code 710)
- **ULI Land Use:** Office (approximately 100,000 ft<sup>2</sup>)

Source	Weekday		Saturday	
ITE	2.39 / 1,000 ft <sup>2</sup>	410 vehicles	0.28 / 1,000 ft <sup>2</sup>	48 vehicles
ULI	<sup>29</sup> 3.40 / 1,000 ft <sup>2</sup>	584 vehicles	<sup>30</sup> 0.35 / 1,000 ft <sup>2</sup>	60 vehicles
<b>Peak Demand:</b>		<b>584 vehicles</b>		<b>59 vehicles<sup>31</sup></b>
		<b>@ 10:00 AM</b>		<b>@ 11:00 AM</b>

Weekday Parking Demand by Time of Day  
Office



Weekend Parking Demand by Time of Day  
Office



<sup>29</sup> 3.15 employee vehicles / 1,000 ft<sup>2</sup> + 0.25 visitor vehicles / 1,000 ft<sup>2</sup>

<sup>30</sup> 0.32 employee vehicles / 1,000 ft<sup>2</sup> + 0.03 visitor vehicles / 1,000 ft<sup>2</sup>

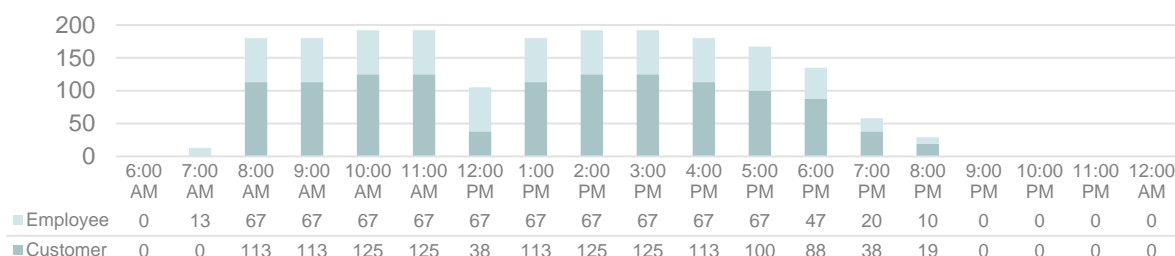
<sup>31</sup> Slightly less than calculated due to rounding within the shared parking model.

## Medical-Dental Office Parking Demand

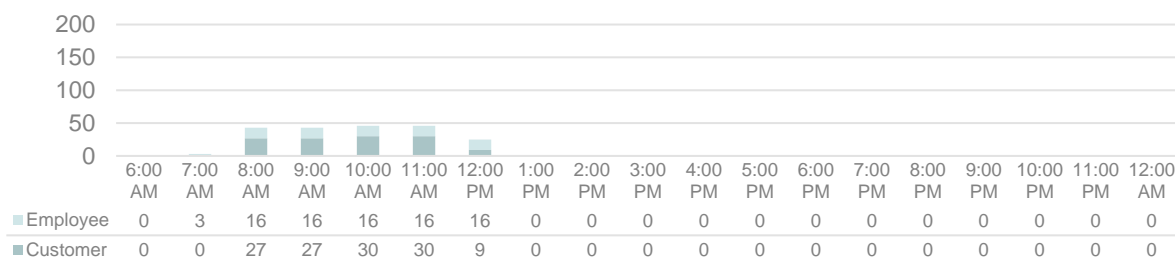
- **Gross Floor Area:** 41,600 ft<sup>2</sup>
- **Minimum Required Off-Street Parking by Code:** 5.00 stalls / 1,000 ft<sup>2</sup>
- **Minimum Required Off-Street Stalls by Code:** 208 stalls
- **ITE Land Use:** Medical-Dental Office Building (Land Use Code 720)
- **ULI Land Use:** Office (approximately 100,000 ft<sup>2</sup>)

Source	Weekday		Saturday	
ITE	3.23 / 1,000 ft <sup>2</sup>	134 vehicles	0.56 / 1,000 ft <sup>2</sup>	23 vehicles
ULI	<sup>32</sup> 4.60 / 1,000 ft <sup>2</sup>	191 vehicles	<sup>33</sup> 1.12 / 1,000 ft <sup>2</sup>	47 vehicles
<b>Peak Demand:</b>		<b>192 vehicles<sup>34</sup></b>		<b>46 vehicles<sup>35</sup></b>
		<b>@ 10:00 AM</b>		<b>@ 10:00 AM</b>

### Weekday Parking Demand by Time of Day Medical-Dental Office



### Weekend Parking Demand by Time of Day Medical-Dental Office



<sup>32</sup> 1.60 employee vehicles / 1,000 ft<sup>2</sup> + 3.00 customer vehicles / 1,000 ft<sup>2</sup>

<sup>33</sup> ULI does not provide a weekday rate for this land use so ITE's 85<sup>th</sup> percentile rate is used, assuming 65% customers / 35% employees

<sup>34</sup> Slightly more than calculated due to rounding within the shared parking model.

<sup>35</sup> Slightly less than calculated due to rounding within the shared parking model.

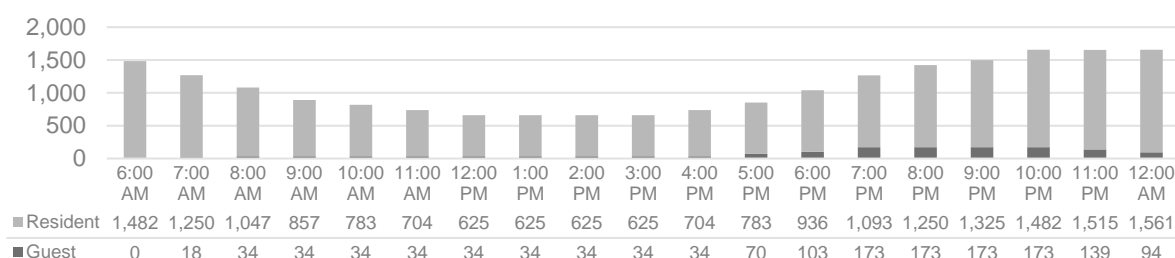


## Residential Parking Demand

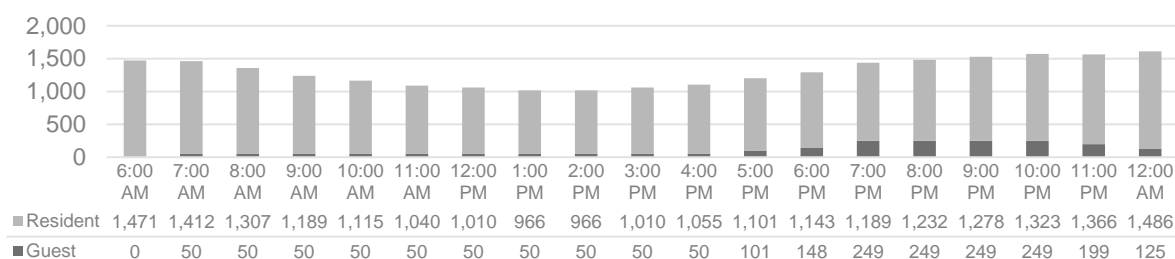
- **Units (Lots within Mixed-Use Core Only):** 1,180 units
- **Minimum Required Off-Street Parking by Code:** 1.50 stalls / dwelling unit
- **Minimum Required Off-Street Stalls by Code:** 1,771 stalls
- **ITE Land Use:** Mid-Rise Multifamily Housing (Land Use Code 221)
- **ULI Land Use:** Residential 1-Bedroom

Source	Weekday		Saturday	
ITE	1.31 / dwelling unit	1,546 vehicles	<sup>36</sup> 1.31 / dwelling unit	1,546 vehicles
ULI	1.00 / 1-BR unit	1,180 vehicles	1.05 / 1-BR unit	1,239 vehicles
ITE (85%) <sup>37</sup>	1.47 / dwelling unit	1,735 vehicles	1.47 / dwelling unit	1,735 vehicles
<b>Peak Demand:</b>		<b>1,655 vehicles<sup>38</sup></b>		<b>1,611 vehicles<sup>39</sup></b>
		<b>@ 10:00 PM</b>		<b>@ 12:00 AM</b>

### Weekday Parking Demand by Time of Day Residential



### Weekend Parking Demand by Time of Day Residential



<sup>36</sup> With only 3 studies, the Saturday rate is unreliable. Weekday rate used.

<sup>37</sup> ULI only provides rates per bedroom. Given the unknown bedroom count, ITE's 85<sup>th</sup> percentile rate is used along with the ULI time of day factors and the ULI resident/guest split (10% guests weekdays, 14% guests on weekends).

<sup>38</sup> Less than calculated as resident and guest demand does not peak within the same hour.

<sup>39</sup> Less than calculated as resident and guest demand does not peak within the same hour.